

June 15, 2001

Dear Stakeholder:

The Rocky Flats Cleanup Agreement (RFCA) Stakeholder Focus Group will meet at the Broomfield Municipal Center at One DesCombes Drive on June 20, 2001 from 3:30 to 6:30 p.m.

The agenda for the June 20, 2001 meeting is enclosed (Attachment A). We will discuss the following topics:

- RSAL Working Group Update
- End State: Baseline Cost Projections - Basis and Uncertainties
- RFCA Parties Feedback - What Heard, How Used, Decisions / Choices Made
- End State: Surface Water - QA and Group Discussion

The meeting minutes for the May 6, 2001 meeting will be sent electronically Monday, June 18 and paper copies will be available at the June 20 RFCA Focus Group meeting.

The RFCA Focus Group Agenda Setting Group held a conference call on June 11, 2001 to plan the path forward as requested at the April 25, 2001 RFCA Focus Group meeting. The revised path forward that resulted from the conference call is enclosed as Attachment C.

In the June 6, 2001 RFCA Focus Group meeting, Russell McAllister presented RFCAs' parties responses to RSALs Task 2 Model Evaluation peer review comments. A copy of the responses are Attachment D. Please look these over and respond to Russell with final comments or issues at 303 966-9692 or email him at russell.mccallister@rf.doe.gov. We will schedule Russell for another meeting with his responses to any questions or concerns still held regarding Task 2.

The RSALs Working Group held a meeting Thursday, June 7. The actions items resulting from the meeting and the agenda for the next RSALs meeting are Attachment E.

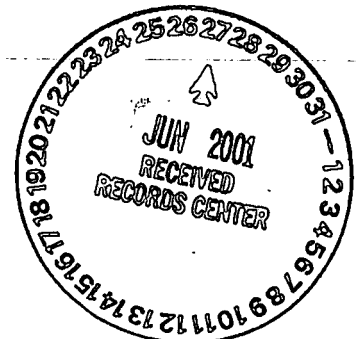
If you need additional information to prepare you for the Focus Group discussion on June 20, 2001, please contact Christine Bennett of AlphaTRAC, Inc. at 303 428-5670 (cbennett@alphatrac.com). Christine will help to find the appropriate resource for you.

You may call either Christine or me if you have any questions, comments, or suggestions concerning the RFCA Stakeholder Focus Group or the upcoming meeting.

Sincerely,

C. Reed Hodgin, CCM
Facilitator / Process Manager

DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE



ADMIN RECORD

SW-A-004348

1/60

RFCA Stakeholder Focus Group Meeting Agenda

When: June 20, 2001 3:30 - 6:30 p.m.

Where: Broomfield Municipal Hall, Bal Swan and Zang's
Spur Rooms

3:30-3:40 Agenda Review, 6/6/01 Meeting Minutes Review, Objectives
for this Meeting

3:40-4:00 RSAL Working Group Update

4:00-5:00 End State: Baseline Cost Projections - Basis and Uncertainties

5:00-5:20 End State: Surface Water - QA and Group Discussion

5:20-5:30 Break

5:30-6:20 RFCA Parties Feedback - What Heard, How Used, Decisions /
Choices Made

6:20-6:30 Set Future Agendas and Review Meeting

6:30 Adjourn

RFCA Stakeholder Focus Group
June 6, 2001
Participants List

NAME		ORGANIZATION / COMPANY
David	Abelson	RFCLOG
Lorraine	Anderson	City of Arvada
Christine	Bennett	AlphaTRAC, Inc.
Kent	Brakken	U.S. DOE - RFFO
Laura	Brooks	Kaiser-Hill Company, LLC
Kimberly	Chleboun	RFCLOG
John	Ciolek	AlphaTRAC, Inc.
John	Corsi	Kaiser-Hill Company, LLC
Carol	Deck	Kaiser-Hill Co, LLC
Rick	DiSalvo	US DOE - RFFO
Shirley	Garcia	City of Broomfield
Steve	Gunderson	CDPHE
Mary	Harlow	City of Westminster
Jerry	Henderson	RFCAB
Reed	Hodgin	AlphaTRAC, Inc.
Victor	Holm	RFCAB
Jeremy	Karpatkin	US DOE - RFFO
Ken	Korkia	RFCAB
Joe	Legare	DOE
Joshua	Levin	Decision Research
Carol	Lyons	City of Arvada
Sandi	MacLeod	U.S. DOE
John	Marler	RFCLOG
Tom	Marshall	Rocky Mountain Peace and Justice Center
Russell	McCallister	DOE-RFFO
LeRoy	Moore	RMPJC
Tami	Moore	DOE
Patricia	Powell	U.S. DOE - RFFO
John	Rampe	U.S. DOE - RFFO
Tim	Rehder	US EPA
Joel	Selbin	
Dave	Shelton	Kaiser-Hill Company, LLC
Carl	Spreng	CDPHE

**RFCA Stakeholder Focus Group
Participants List**

**Broomfield City Hall
January 31, 3:30-6:30 p.m.**

Noelle	Stenger	RFCAB
Honorable Hank	Stovall	City of Broomfield
George	Vancil	City of Arvada

RFCA Stakeholder Focus Group

June 6, 2001

Meeting Minutes

INTRODUCTION AND ADMINISTRATIVE

A participants list for the June 6, 2001 Rocky Flats Cleanup Agreement (RFCA) Stakeholder Focus Group meeting is included in this report as Appendix A.

Reed Hodgins of AlphaTRAC, Inc., meeting facilitator, reviewed the purpose and meeting rules. Introductions were made.

Reed asked if there were any questions or comments regarding the May 9, 2001 meeting minutes, noting that the Focus Group would again be asked after the break, as the meeting minutes were just out that day.

Reed reviewed the meeting agenda, which included:

- RSAL Working Group Update
- Task 1 Peer Review Discussion
- RSALs Task 2, Model Evaluation Discussion
 - RFCA parties' responses to peer review comments
 - EPA RAGs modeling overview
 - Focus Group Summary of Task 2 Issues
- End State Presentation and Discussion: Surface Water
- RFCA Parties Feedback – What Heard, How Used, Decisions / Choices Made
- Set Future Agendas and Review Meeting

RSAL WORKING GROUP UPDATE

Reed noted that the objective for this discussion was to:

- Keep up to date on working group progress

Steve Gunderson of the Colorado Department of Public Health and Environment (CDPHE) briefed the Focus Group on the status of the Radiological Soil Action Levels (RSALs) Working Group.

Steve stated that the RSAL Working Group had been finalizing parameter selection and calculations in preparation for risk and dose calculations. Recent efforts had focused on:

- Plant ingestion, especially differentiation between leafy and non-leafy vegetables,
- Mass loading distribution, especially the shape of the distribution curve above the 80th percentile, and
- Soil ingestion, and incorporation of results from the Anaconda, Montana Superfund studies.

Steve indicated that risk and dose calculations were imminent and that the RSAL Working Group might have results for presentation at the RFCA Focus Group meeting on July 11, 2001.

The Focus Group discussed the basis for the soil ingestion input parameter at some length. Some members questioned if multiple studies had been examined before settling on the Anaconda study as a basis for the input distribution. Others were concerned with the sample size of the Anaconda study might be too small. Others were concerned that the soil ingestion rate developed might be lower (thereby resulting in lower doses and risks) than that calculated by RAC in its earlier analysis.

Reed summarized the discussion by communicating to the agencies that it will be very important to justify that soil ingestion number used in the RSAL calculations - why those data are most appropriate to use and why the sample size is appropriate for this purpose. It will also be important to demonstrate clearly the degree to which the results are "conservative" - tending to overestimate health impacts as a compensation for uncertainties.

RSALS TASK 2, RAGS MODEL OVERVIEW

Reed noted the objectives for the Risk Assessment Guidance for Superfund (RAGS) model overview:

- Get overview understanding of RAGS
- Understand RAGS role in RSAL process

Susan Griffin of the U. S. Environmental Protection Agency (EPA) provided an overview briefing on EPA's RAGS risk assessment model and its application to the Rocky Flats Radioactive Soil Action Level (RSAL) setting process. A copy of Susan's presentation is included as Appendix B.

Susan discussed the risk assessment approach that EPA uses at all CERCLA sites. She described the use of site conceptual models and showed examples from the RSAL project.

Susan then explained the theory and equations that make up the RAGS risk modeling approach. She referred to the documentation that had been included in the meeting packet.

She showed how risk is calculated using a reasonably maximum exposure analysis using RAGS. She indicated that the highest exposure that is reasonable to expect is calculated for every scenario. She stated that site-specific input values are used where possible, with EPA-specified national values used when local data are not available.

Susan also compared the RAGS approach to the probabilistic method used in the RESRAD model. Susan discussed risk vs. dose modeling and their applications to this project.

Susan then held a discussion with the Focus Group.

Members of the Focus Group moved the discussion back to the Anaconda ingestion study with a concern again raised about the size of the sample in the study. Susan responded by stating the importance of examining study design and noted other studies that had corroborated the Anaconda tests.

Members asked about the approach used in RESRAD for probabilistic calculations. Susan explained that thousands of individual calculations are performed, each with different values from the distributions that describe the different input parameters. Then the thousands of individual results are grouped and examined statistically.

RSALS TASK 2, MODEL EVALUATION DISCUSSION

Reed noted the objectives for the RSALs Task 2, Model Evaluation discussion:

- Get agency response to peer review comments
- Discuss task 2 report and peer review
- Reach closure for focus group

Russell McAllister of the U. S. Department of Energy (DOE) presented the agencies' response to the Peer Review comments. He distributed a written response to the Focus

Group at the meeting (Appendix C). He also distributed a written response to comments received from LeRoy Moore and Victor Holm (see the June 20, 2001 packet).

Russell noted that the peer reviewers had come to very different conclusions in their reviews of the Task 2 report. He stated that Reviewer 1 found that the approach was sound and justified by the analysis. He indicated that a number of small issues and editorial comments raised by this reviewer would be addressed in the revision to the Task 2 report.

Russell noted that Reviewer 2 was much more critical of the report. He believed that the reviewer found the overall approach to be sound and appropriate, with the exception of two major deficiencies:

- CERCLA regulatory requirements are not addressed in the Task 2 report, and
- The requirement that the model be in the public domain is overly restrictive.

Russell stated that the first issue was addressed in the Task 1 report, and thus not repeated in the Task 2 report. He noted that the bottom line of the regulatory requirements for modeling is that both Nuclear Regulatory Commission and EPA requirements must be met, resulting in modeling for both dose and risk.

Russell indicated that the public domain requirement had been established to ensure that a thorough scrutiny of the modeling methodology could be made by the agencies and members of the community.

Russell also noted that the reviewers had asked for more background information about approaches and methodologies. He stated that more information would be included in the next revision of the report, including an executive summary, the choice and application of the probabilistic approach, and the conceptual site model.

Reed asked that members of the Focus Group submit specific comments on the response documents after they had a chance to read the document. He then turned the meeting over to the Focus Group for an initial discussion.

The group first discussed the RAC application of RESRAD and its role in the Task 2 review. It was noted that the agencies believe that most of the issues around the RAC application of RESRAD were really related to choice of parameters rather than modeling methodology. Russell noted that a comparison of RAC's RESRAD to RESRAD 6.0 for air resuspension showed similar results.

A member of the Focus Group noted that the recent modeling workshop was very helpful on this issue. He suggested that some of the materials and findings be included in the revised Task 2 report.

It was clarified during the discussion that risk would be calculated using both RESRAD 6.0 and RAGS. It was requested that the agencies' overall approach to evaluating risk, including how RESRAD and RAGS would both be used, be included in the Task 2 report.

It was noted that the Task 2 report should specifically state how the evaluation criteria established in the review are necessary and sufficient to meet the objectives of the model review.

The discussion returned to parameters for a few minutes. Some concern was voiced about the use of mean values (rather than extreme values) for RESRAD input parameters that were being assigned point values rather than distributions. Russell responded that point values were being used only for those parameters that had minimal affect on model results, so it would not matter whether a mean or extreme was used. It appeared from the discussion that further explanation of the use of distributions and point estimates would be beneficial - either in the Task 2 or Task 3 report.

The agencies requested that the Focus Group answer two questions when reviewing agency responses to the peer reviews:

- Did the response document adequately address the issues raised by the peer reviewers, and
- Are there any remaining major unresolved issues in Task 2?

Reed discussed the path forward with the Focus Group. The group agreed that they could not close their discussion of Task 2 until they had read and commented on the agencies' response documents.

TASK 1 PEER REVIEW DISCUSSION

Reed introduced this agenda item as a continuation of a discussion that had begun at the last Focus Group meeting. He noted the objectives for the Task 1, Peer Review discussion:

- Obtain issues from the Focus Group regarding the Task 1 peer review and response;

- Communicate these issues to the agencies; and
- Get responses from the agencies.

Reed turned the floor over to the Focus Group to raise and address their issues.

The discussion focused on the choice of the anticipated land use scenario. Some members of the Focus Group asked why the wildlife refuge worker had been chosen as the anticipated land user instead of the more conservative resident rancher scenario. These members felt that a more conservative scenario would be more protective of any possible future use at Rocky Flats. It was asked if the decision to use the wildlife refuge worker scenario was final.

EPA responded that the scenario was not absolutely set because the final decision rested with the agency Principals. However, all three agency Project Coordinators (EPA, CDPHE, and DOE) stated clearly that, based on the information so far on the table, they would recommend to their Principals that the wildlife refuge worker scenario be considered the anticipated land user.

CDPHE reminded the group that all of the planned scenarios would be evaluated and the results of all considered in the analysis.

The agencies provided a perspective on the requirements and guidance (especially associated with CERCLA) and how they set bounds on the assessment and the choices that could be made. EPA noted that the law does not require a dependence on anticipated future use, but stated that this approach is strong EPA policy.

DOE noted that the current analysis is constrained in practice by the laws and guidance and compared this to the 1996 RAC analysis, which was deliberately NOT constrained in this way.

A member of the Focus Group noted that the law did not prohibit the agencies from being more protective than the minimum required and suggested that the resident rancher or another scenario more cautious than the wildlife refuge worker could be recommended by the agencies.

The agencies responded that they had evaluated the different scenarios and considered the wildlife refuge worker to be an appropriately conservative scenario to represent anticipated future land use.

Another member of the Focus Group noted that the choice of an anticipated land use scenario for Rocky Flats is being viewed as potentially policy setting across the DOE

Complex. He noted that the choice will thus be evaluated against national needs as well as local needs. He suggested that the community should expect the precedent-setting aspect of this decision to affect the degree of conservatism that DOE and Congress would support at Rocky Flats.

A member of the Focus Group confirmed that the law allows the adoption of a more conservative scenario and that he would continue to oppose any anticipated land use scenario that was less conservative than the resident rancher scenario.

Another member of the Focus Group pointed out that, while the law allows a more conservative approach, the most conservative approach is not required. The law also allows the approach being used.

CDPHE explained that the agency's charge from its Principal was to work within the laws and guidance. The legal staff at the agency had thoroughly evaluated the intent of the law and guidance and had determined that the approach currently being used was most consistent with the intent and application of the laws and guidance.

A member of the Focus Group expressed confusion on how ALARA was going to be conducted as part of the regulatory framework. CDPHE responded that the approach to ALARA would be precedent setting, was yet to be developed, and would be a major policy topic for both the agencies and the Focus Group.

A member of the Focus Group stated that one of the most important policy discussions with the community was to determine where cleanup should go beyond that required by law for reasons that make sense to everyone. EPA noted that the 903 pad cleanup could be a specific example - where surface water protection produced a cleanup beyond the CERCLA requirements.

DOE stated that the challenge to the agencies and the community is to determine the smartest way to spend the cleanup up funding at Rocky Flats.

END STATE PRESENTATION AND DISCUSSION: SURFACE WATER

Reed indicated that the objective for the surface water end state presentation was:

- Provide an overview of the issues and options associated with surface water end state at Rocky Flats.

John Rampe of DOE presented the overview (see the June 6, 2001 packet).

John discussed four components of the surface water picture at Rocky Flats:

1. Basic studies,
2. Environmental restoration,
3. Land reconfiguration, and
4. Water management.

He then addressed policy / technical questions that were being considered as the discussion gets underway:

- Are there specific areas where removing contamination will significantly improve water quality and/or lessen DOE's stewardship obligations?
- Is stabilization "as good as" removal when it comes to long term surface water quality protection?
- Given that Site water quality is already reasonably good, to what extent should water quality protection be a goal of environmental restoration projects? Where is it appropriate?
- Regarding passive treatment systems, have they been designed to be commensurate with the expected lifetime of the contaminant? Is additional subsurface source removal warranted?

The Focus Group then discussed the surface water end state picture. The discussion was limited by available time.

A technical discussion centered on the effects of colloidal suspension and states of plutonium on transport in surface water. Both the actinide migration study at Rocky Flats and a study at Yucca Mountain were discussed.

Another topic discussed was compliance obligations. This discussion centered on the surface water standard. DOE was asked if it was proposing a change to the water standard. DOE responded that it had not proposed a change to the Water Quality Control Commission, though there was a potential that this discussion could occur. The focus right now is more on where and how water quality will be measured for comparison to the standard. There is also a focus on the design of a water quality monitoring system that will be effective into the Stewardship period.

A member of the Focus Group asked if the Fish and Wildlife Service would be involved in developing the monitoring plan. DOE responded that the Service would be involved.

The discussion was closed due to time constraints.

NEXT MEETING AGENDA

Members of the Focus Group expressed concern that there was insufficient time on the agendas to properly discuss the topics presented. It was noted that this was especially true for the end state discussion; that Surface Water Management needed much more time for dialog than had been available.

Reed agreed to address this problem with the Agenda Group.

The meeting was adjourned at 6:35 p.m.

**RFCA Stakeholder Focus Group
June 6, 2001
Meeting Minutes**

**Appendix A
Participants List**

**RFCA Stakeholder Focus Group
June 6, 2001
Meeting Minutes**

**Appendix B
Susan Griffin, U. S. Environmental Protection Agency:**

**RFCA Stakeholder Focus Group
June 6, 2001
Meeting Minutes**

**Appendix C
Russell McCallister, U. S. Department of Energy:**

DEVELOPMENT OF RISK- BASED SOIL ACTION LEVELS AT ROCKY FLATS

SUSAN GRIFFIN, PhD, DABT
TOXICOLOGIST
U.S. EPA, Region

Dose vs. Risk

- Absorbed Dose

- Mean energy imparted by ionizing radiation to matter per unit mass ($D=e/m$)

- Risk

- An estimation of the qualitative and quantitative potential (expressed as a probability) for an event to occur. (i.e., a one in a million probability of an individual coming down with cancer)

Dose vs. Risk

- Dose

- A dose equivalent (such as 15 mrem) needs to be placed within the context of existing information relating dose with known cancer effects

- Risk

- Risk already includes a comparison between site-specific exposures and a known toxicity benchmark
- EPA is required to perform an evaluation of risk at all CERCLA sites

Risk Assessment Guidances For Superfund

- National Academy of Sciences. 1983. *Risk Assessment in the Federal Government: Managing the Process*.
- U.S. EPA. 1989. *Risk Assessment Guidance for Superfund: Volume 1. Human Health Evaluation Manual*.
- U.S. EPA. 1991a. *Human Health Evaluation Manual, Part B. Development of Risk-based Preliminary Remedial Goals*.
- U.S. EPA, 1991b. *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors*.
- U.S. EPA 1992. *Guidance on Risk Characterization for Risk Managers and Risk Assessors*

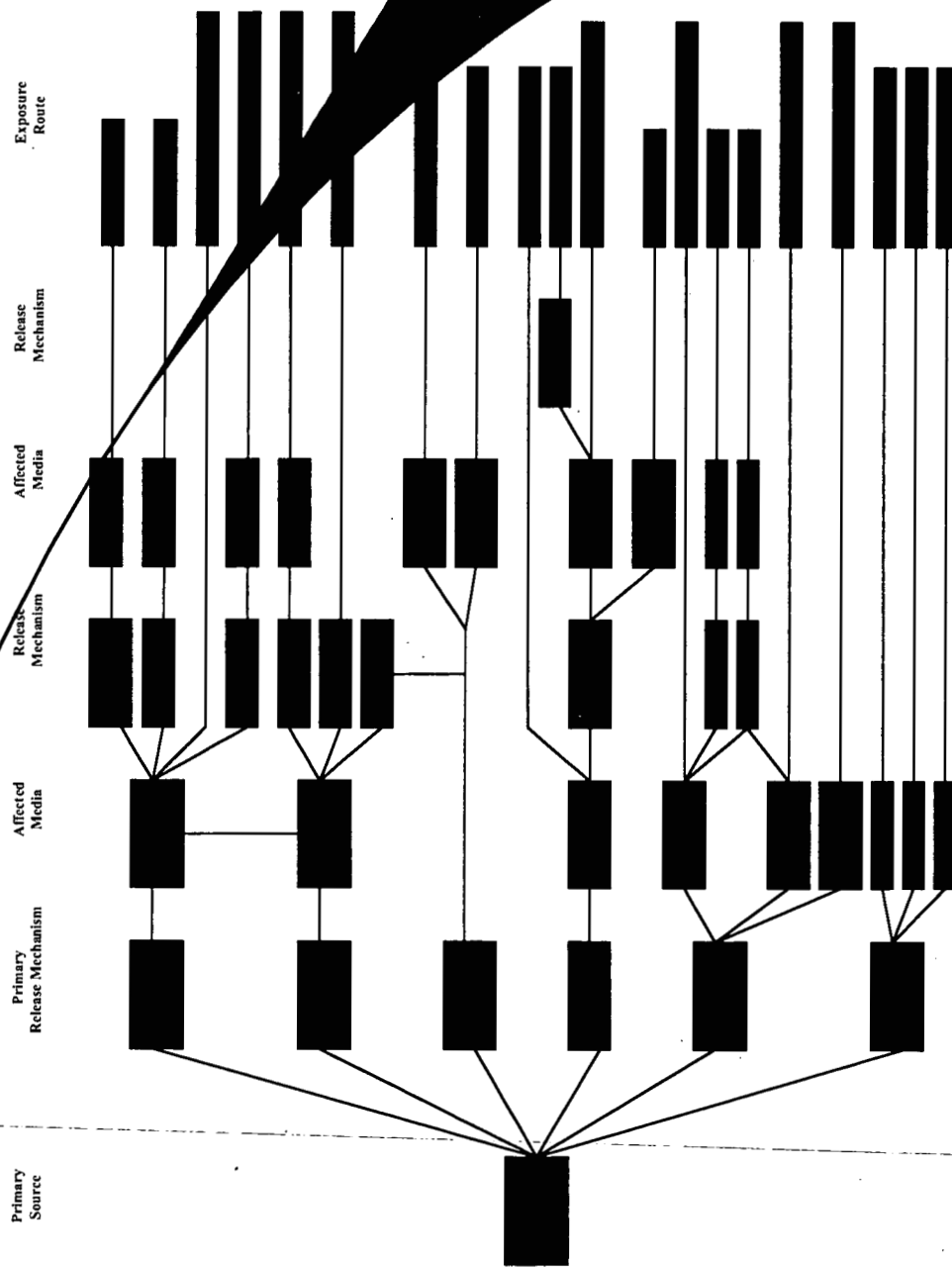
Site Conceptual Models

- Risk assessments are expected to look at both current and probable future land uses at a site.
 - Once the risk assessment is completed, risk decision makers (including stakeholders) will choose the most likely land use and the appropriate remediation strategy

Site Conceptual Models

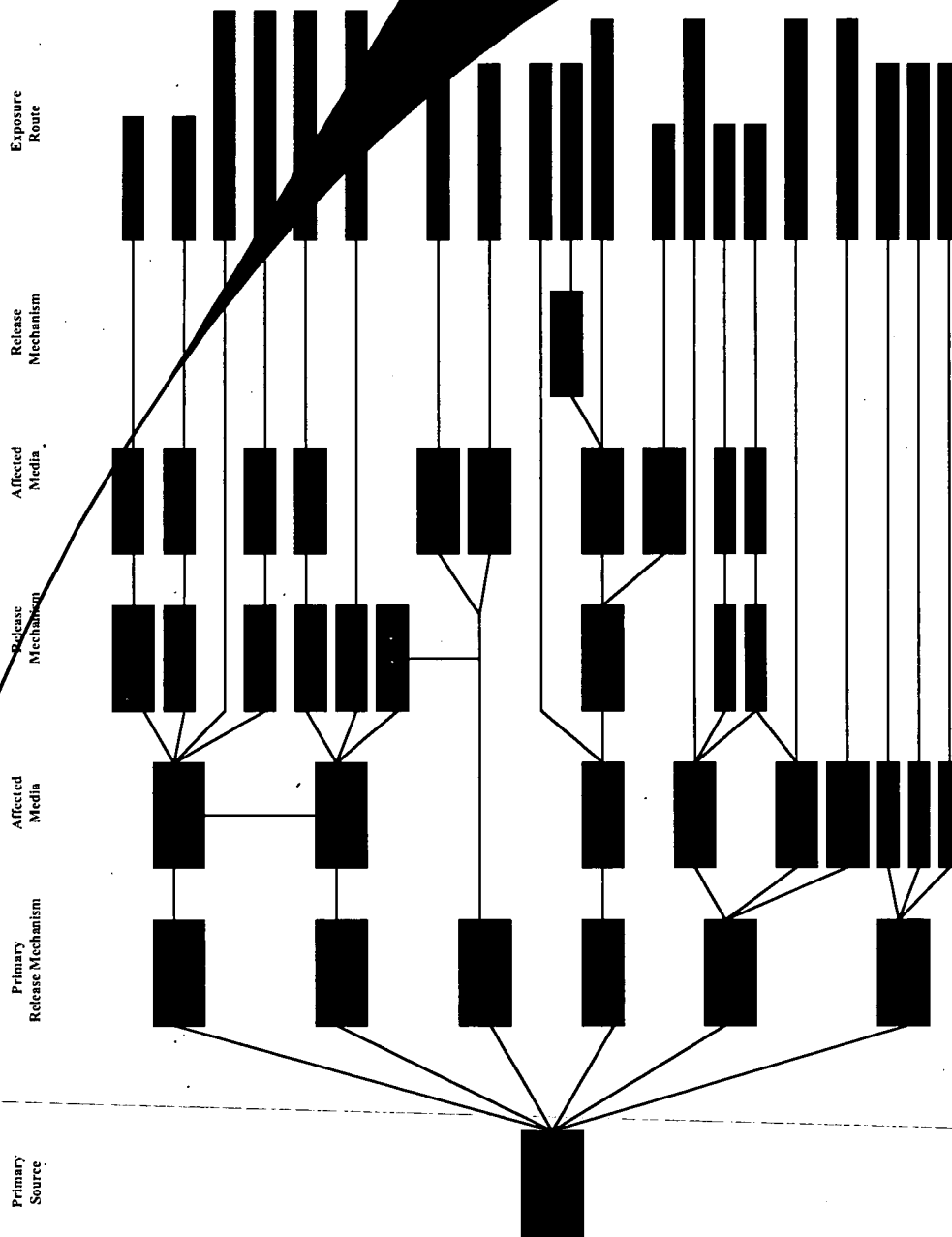
- Definition of a site conceptual model
 - A graphical illustration of where the contamination originates, how it moves through the environment, and how humans come into contact with the contaminated media
- Value of a site conceptual model
 - Illustrates which pathways are important (and which are not)
 - Illustrates which pathways are complete
 - Guides and focuses data collection
 - Illustrates where remediation efforts will be most effective

Residential Site Conceptual Model



(*) - This exposure route is insignificant since a small fraction of radioactive material is resuspended and subsequently deposited on soils.

Wildlife Worker



(*) - This exposure route is insignificant since a small fraction of radioactive material is resuspended and subsequently deposited on soils.

Best Available Copy

Exposure Assessment

Definition

Estimation of the magnitude, frequency, duration, and routes of exposure

- Routes of exposure
- Ingestion of soil/sediment
- Ingestion of home-grown produce
- Inhalation of particulates
- External gamma irradiation

Exposure Assessment

Assessing magnitude and duration of exposure
Ingestion of radionuclides in residential soil

$$PRG = TR / SF \times IR \times 1 \times 10^{-3} \times EF \times ED$$

PRG = preliminary remediation goal

TR = target cancer risk

SF = soil ingestion slope factor

EF = exposure frequency

ED = exposure duration

EXPOSURE ASSESSMENT

- External exposure to radionuclides in soil

- $PRG = TR / S_f \times (EF / 365) \times ED \times ACF \times [ET_o + (ET_i \times GSF)]$

- PRG = preliminary remediation goal
- TR = target cancer risk
- S_f = external slope factor
- EF = exposure frequency
- ED = exposure duration
- ACF = area correction factor
- ET_o, ET_i = exposure time fraction outdoors, indoors
- GSF = gamma shielding factor

EXPOSURE ASSESSMENT

- What values are input to the parameters?
 - CERCLA law requires EPA to base human health remedial decisions on an estimate of the Reasonable Maximum Exposure (RME)
 - The intent of the RME is to estimate a conservative exposure case that is within the range of possible exposures
 - If adequate site-specific data is available it should be used in the exposure assessment
 - If not, EPA recommends the use of standard RME default values (USEPA, 1991a)

TOXICITY ASSESSMENT/ RISK CHARACTERIZATION

The preliminary remediation goal includes a toxicity benchmark (i.e., cancer slope factors) in addition to the exposure assessment

Cancer slope factors for radionuclides represent lifetime excess cancer risk per unit intake (risk/pCi)

Slope factors are available for the ingestion, inhalation and external exposure pathways

Updated slope factors are available on EPA's web site

RISK CHARACTERIZATION

Risk is described as a probability of coming down with cancer over a lifetime as a result of chronic exposure to a contaminant

Risk can be expressed as a one in a million chance of cancer as a 0.000001 chance, or in scientific notation 1×10^{-6}

In the Superfund program action is typically not warranted unless cumulative carcinogenic risks exceed 1×10^{-4} , unless there are adverse environmental impacts or ARARs are exceeded (USEPA, 1991b)

State regulatory agencies may have other programmatic guidance

RISK CHARACTERIZATION

In addition to a quantitative estimate of risk, an assessment should discuss what we know, what we don't know, and how it impacts the outcome(e.g., Does the model include the pathways of exposure and exposed populations at a site? What are the limitations of the data used to develop parameter inputs?



SUMMARY

Development of preliminary remediation goals begins with the site conceptual model

Equations and models should include all components and significant exposure pathways identified in the conceptual models

In a point estimate approach, inputs to the parameters should represent an RME individual

In addition to a quantitative estimate of risk, the uncertainty surrounding the risk estimate should be discussed

TYPES OF MODEL INPUTS

- Model: $Y = f(A, B, C, D)$
- A, B, C, and D are model inputs
- Each input can be either
 - Constant
 - Variable

BODY WEIGHT OF MEN

Summary Statistics

N = 1000

Mean = 69.7 kg

Stdev = 15.2 kg

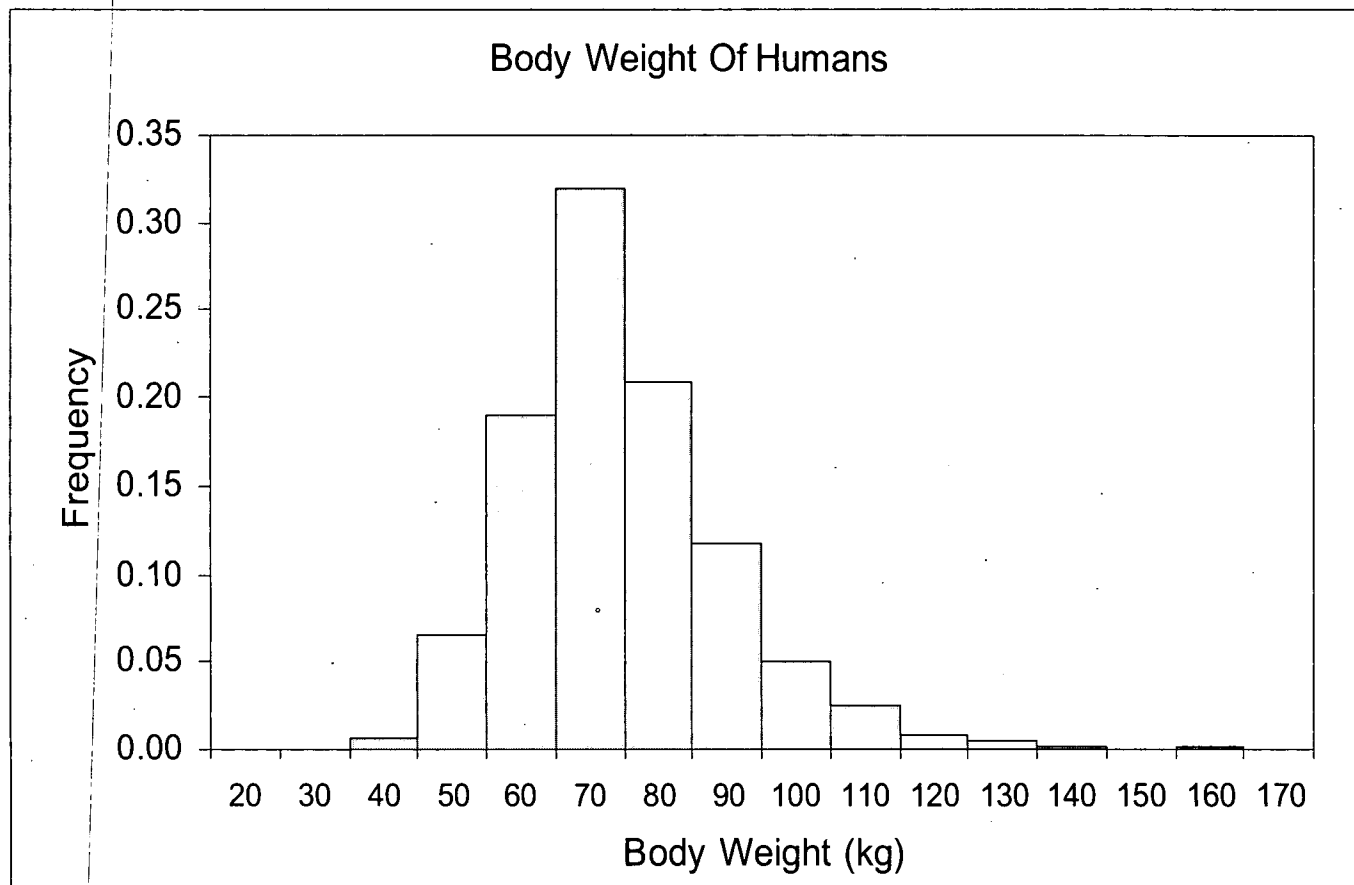
Min = 38 kg

Max = 157 kg

95th percentile = 98 kg

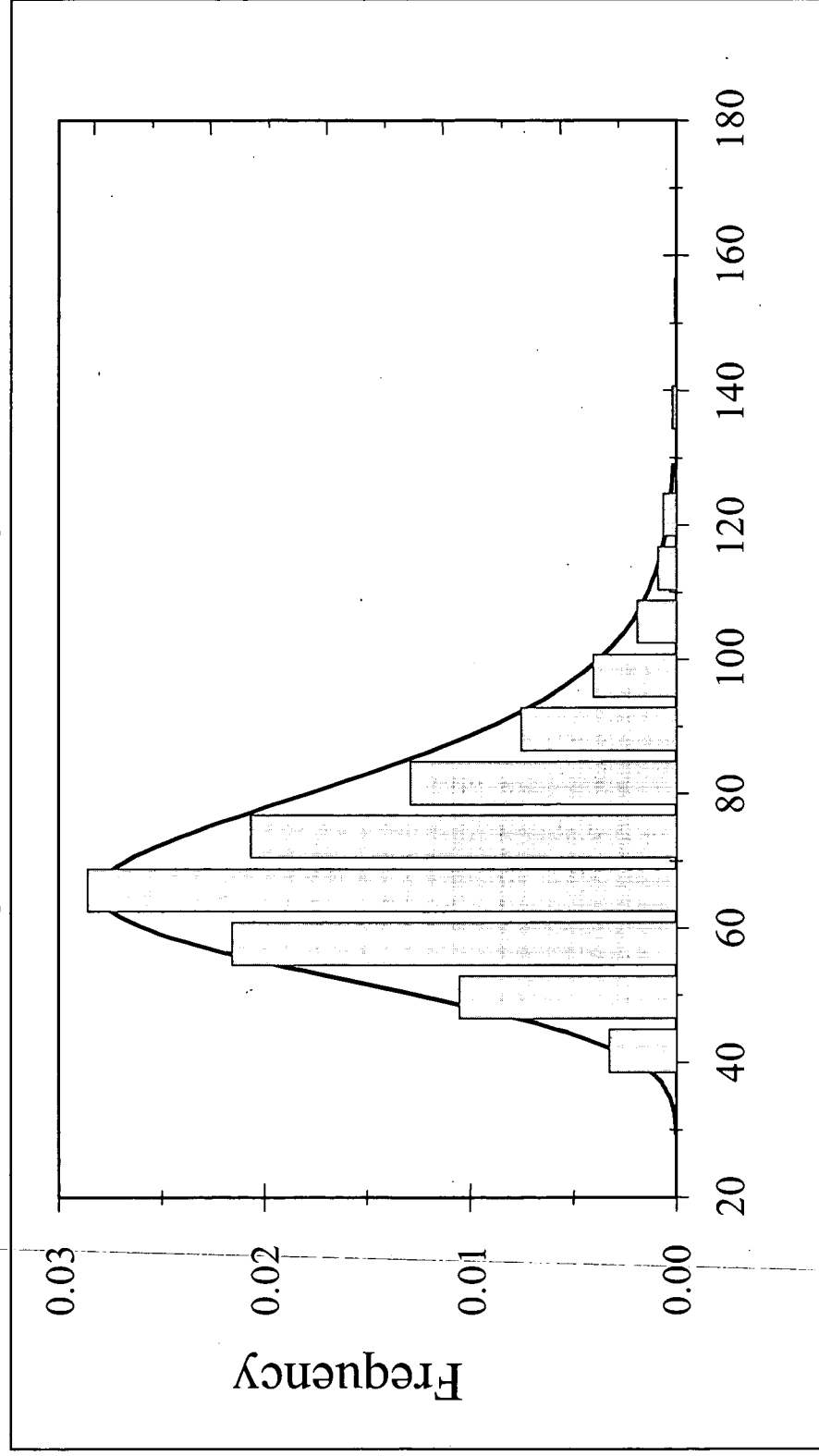
BODY WEIGHT OF MEN

Histogram



BODY WEIGHT OF MEN

Probability Density Function



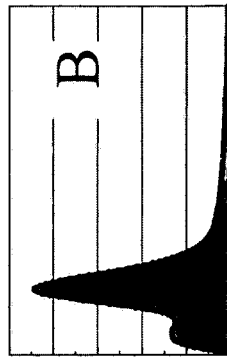
Problem: How Do You Get the Result?

$$Y = A \mathbf{H} B \mathbf{H} C$$

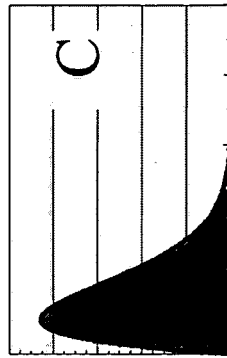
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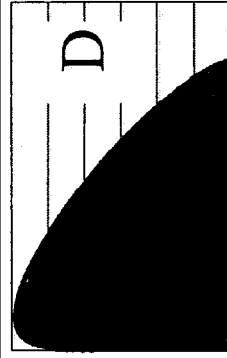
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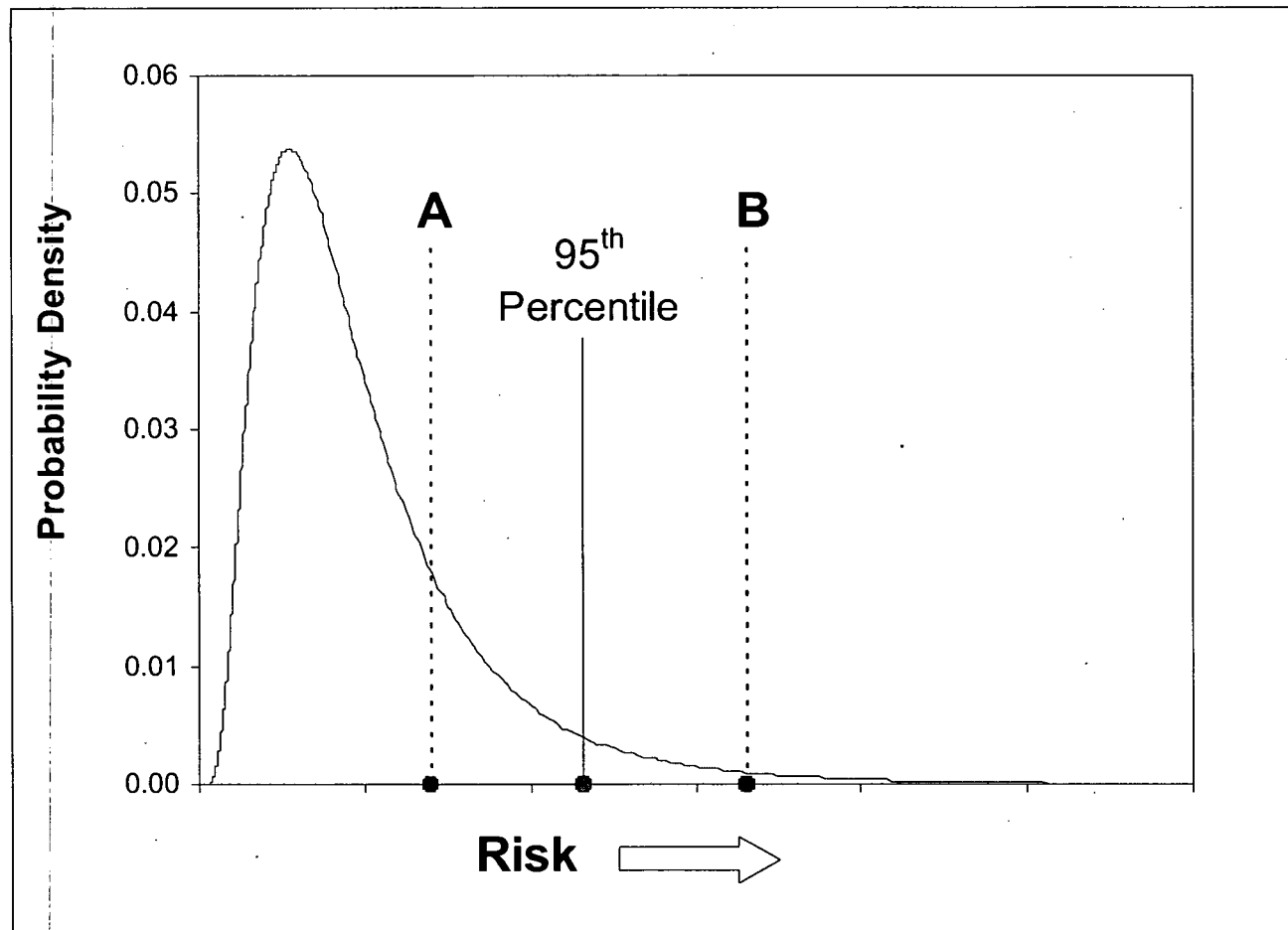
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Does the RME Risk exceed the Target Risk?



Advantages and Disadvantages of Point Estimate Approaches

Advantages	Disadvantages
Uses conservative assumptions to ensure protection of human health	Results in a single point estimate of risk, which may be viewed as a “bright line”
Useable as a screening method	Provides little insight regarding variability and uncertainty in risks
Employs consistent approach and standardized reporting methods	Provides fewer incentives for collecting better or more complete information
Easily understood and communicated	Addresses uncertainty in a qualitative manner
Requires less time to complete; not resource intensive	Uses less information on exposure and toxicity, which may lead to greater uncertainty
Based on standard equations and exposure assumptions	

POINT ESTIMATE APPROACH

Upper Bound (RME)

Assume target RME = 95th percentile
(this is a risk management choice)

How do you calculate the 95th?

$$Y_{95} ? f(A_{95}, B_{95}, C_{95}, D_{95})$$

$$Y_{95} \cup f(A_{mean}, B_{95}, C_{mean}, D_{95}) \quad (maybe)$$

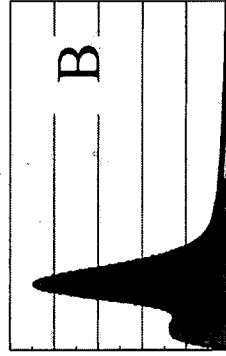
Problem: How Do You Get the Result?

$$Y = A \mathbf{H} B \mathbf{H} C$$

D



x



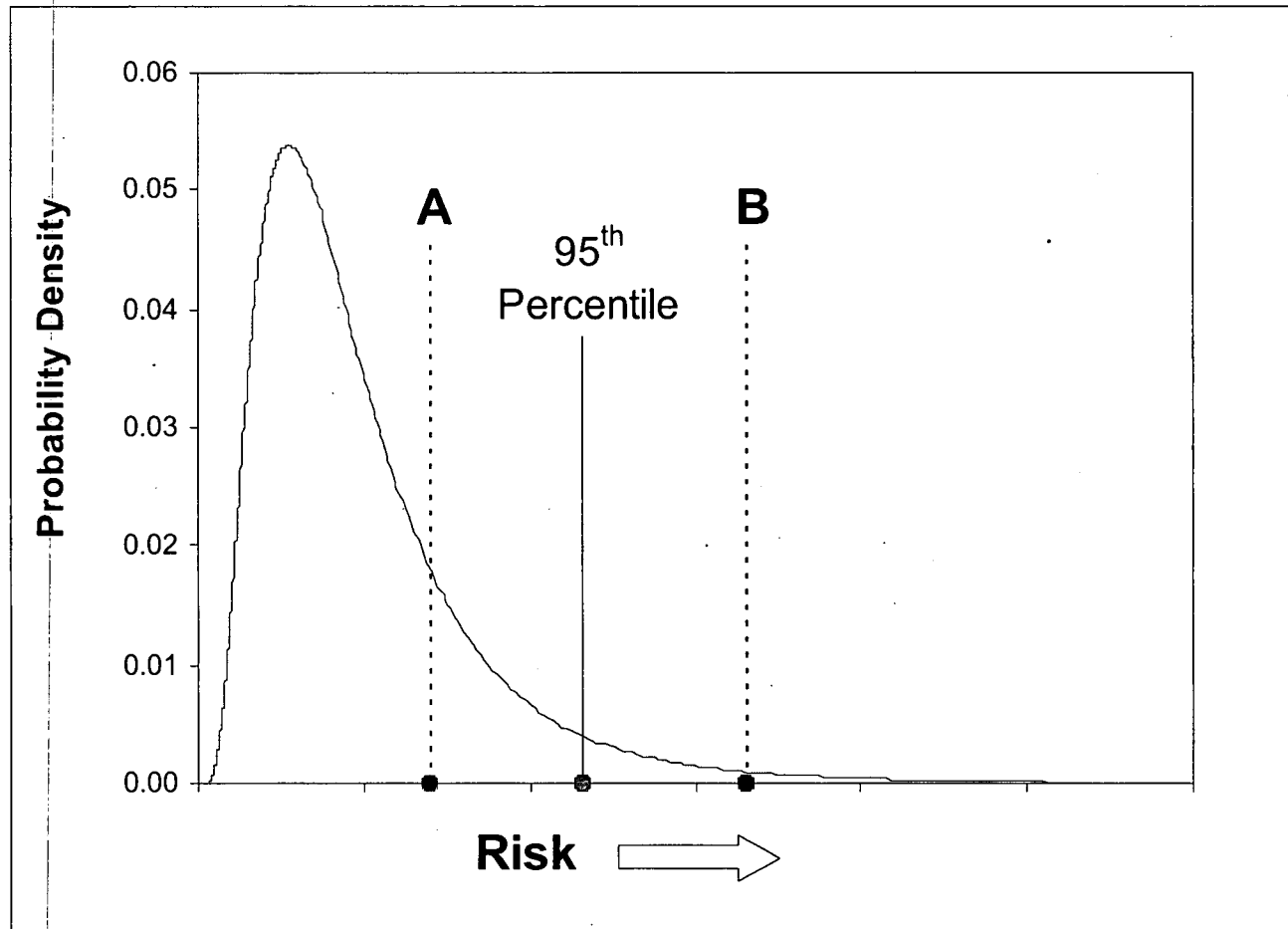
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Does the RME Risk exceed the Target Risk?



Advantages and Disadvantages of Probabilistic Approach

Can make more complete use of site data to characterize variability and uncertainty in risk	Sufficient information may be lacking on variability and uncertainty for important exposure variables
Quantitative data on the uncertainty in exposure variables can be modeled and may support statistical confidence limits on risk assessments	May require more time and resources to select and fit probability distributions
Sensitivity analysis can identify pathways and parameters which strongly influence the risk outcome	May convey false sense of accuracy unless the exposure models and distributions are representative of site conditions
Can identify data gaps for further evaluation/data collection	May introduce inconsistency in risk estimates across sites due to different choices of distributions and risk percentile

RFCA Stakeholder Focus Group Path Forward
DRAFT (Revised 6/11/01)

Meeting	Agenda
June 20	<ul style="list-style-type: none"> • End State: Baseline Cost Projections – Basis and Uncertainties • End State: Surface Water- Q&A and Group Discussion • RSALs: Working Group Update • RFCA Parties Feedback – What Heard, How Used, Decisions / Choices Made
July 11	<ul style="list-style-type: none"> • RSALs: Working Group Update • RSALs: Parameter Evaluation (Task 3) – Modeling Results • RSALs: ALARA <p>Note: Meeting will begin at 3:00 pm and end at 6:30 pm</p>
July 25	<ul style="list-style-type: none"> • RSALs: Working Group Update • RSALs: ALARA, Cont. • RSALs: Fires or Task 2 Final Discussion or Task 4 Final Discussion • End State: Surface Contamination • RFCA Parties Feedback – What Heard, How Used, Decisions / Choices Made
August 8	<ul style="list-style-type: none"> • RSALs: Working Group Update • RSALs: Parameter Evaluation (Task 3) – Draft Report • RSALs: Fires or Task 2 Final Discussion or Task 4 Final Discussion • End State: Subsurface Contamination
August 22	<ul style="list-style-type: none"> • RSALs: Working Group Update • RSALs: Multi-tiers • End State: Miscellaneous Topics • RFCA Parties Feedback – What Heard, How Used, Decisions / Choices Made
September 5	<ul style="list-style-type: none"> • Dialog With RFCA Principals • RSALs: Working Group Update • RSALs: Parameter Evaluation (Task 3) – Peer Review and Responses • End State: Stewardship II



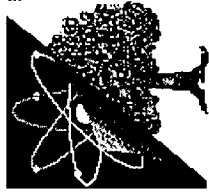
Response to Peer Reviewer's Comments on the Rocky Flats Cleanup Agreement (RFCA) Radionuclide Soil Action Level (RSAL) Working Group (RWG)

Task 2 Report Computer Model Selection

June 6, 2001

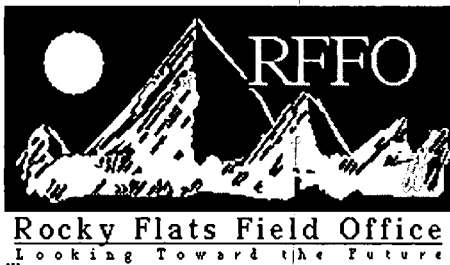


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Received Comments from Four Peer Reviewers

- x Two anonymous people hired by AlphaTrac
- x Victor Holm (Received 9/12/00, response 9/28/00)
- x LeRoy Moore



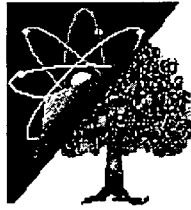
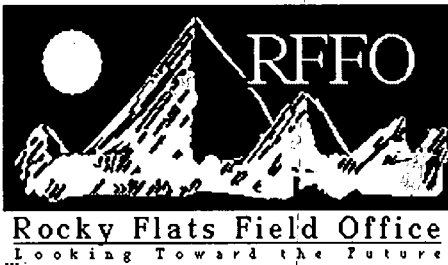
Two Anonymous Peer Reviewer's

- ✕ First Reviewer's basic conclusion "The use of the newest version of RESRAD is sound and is justified by the analysis."
- ✕ Second Reviewer's basic conclusion "The overall approach is basically sound and appropriate, but there are two critical deficiencies."
 - ✓ The report ignores the CERCLA regulatory requirements for risk
 - ✓ The requirement that the model be in the public domain is unnecessarily restrictive



Agency's Comment - 1st Deficiency

- ✕ The Task 1 Report explains the roles of EPA and NRC
- ✕ Task 1 report says that any RSAL will have to meet the protective requirements of both the NRC and EPA
- ✕ The RSAL will be calculated using Dose and Risk

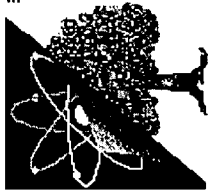


Agency's Comment - 2nd Deficiency

- ✗ Benchmarking is the industry standard for demonstrating a new computer codes validity
- ✗ Can only occur if the executable code is available in the public domain and available to many different users
- ✗ RAC precluded the use of MEPAS because it could not obtain code



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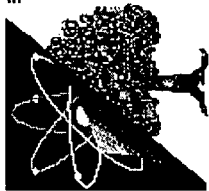


Other Peer Review Findings

- ✗ Needs more background information
 - ✓ Conceptual Site Model
 - ✓ Explain Probabilistic vs. Deterministic
 - ✓ Need for Executive Summary
 - ✓ And the most important.....



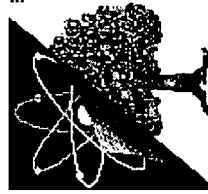
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Criterion, not Criteria



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Conclusion

- ✕ Will make revisions to add background information, explain more detail
- ✕ No major changes to Criteria
- ✕ Agency's proceeding using RESRAD 6.0 as the best computer code
- ✕ Final Task 2 Revision June 29, 2001

**Response to Comments made by LeRoy Moore
On the Rocky Flats Cleanup Agreement (RFCA)
Radionuclide Soil Action Level (RSAL) Working Group (RWG)
Task 2 Report Computer Model Selection**

June 6, 2001

The following is the Agency's response to Comments made by LeRoy Moore of the Rocky Mountain Peace and Justice Center received May 24, 2001. Our response will be italicized.

The cover page of this report does not identify it as the RSAL Task 2 report. Nor is the author of the report anywhere named. I assume it is Russell McCallister only because we were told he wrote the initial draft. It would help to have both of these identifiers on the title page. It is also not clear whether this version of the report is supported by all the agencies or whether it represents the point of view of the author only.

Agency Response: The report will be modified to reflect that it is part of the RFCA RSAL review process, Task 2 and that the original was drafted by the Department of Energy and Kaiser-Hill. It will also reflect that it is a pre-decisional draft and not endorsed by DOE, EPA or CDPHE management.

This version differs only slightly from the original draft dated Oct. 26, 2000, and received by the Focus Group in late Nov. But slight changes in this version of the report make it's inherent weaknesses stand out. The following comments refer mainly to areas where some change has been made from the original draft.

2.3 Perhaps it is appropriate to refer to RESRAD 5.82 as modified by RAC as the "RAC Code," but it seems something of an overstatement to assert that "the RAC developed computer model should not be considered associated with RESRAD' for the reasons cited. Since RAC launched its work from the platform of RESRAD 5.82, wouldn't it be more accurate and less abrasive to say: "RAC's modifications of RESRAD 5.82 do not have the endorsement of ANL; in ANL's view [if it its ANL's view--if not, whose opinion is this?], modifications made by RAC may have altered the initial integrity of the original RESRAD code." As is, this statement is an allegation with no demonstrated basis.

Agency Response: The language will be modified to say, "RAC's modifications of RESRAD 5.82 provide an air pathway calculation that differs from that of the original code. This modification constitutes a departure from RESRAD's formulation, in a manner that has not been fully documented.

4.1.7 The final sentence states that "the computer codes [for RESRAD 6.0} themselves can only be obtained with special permission from Argonne National Laboratory." Given the fact that Joe Legare has several times stated to the Focus Group that these codes would be provided for the current RSAL work, have they been requested? Have they

been received? Will they be made available to all stakeholders and specialists participating in the upcoming computer workshop? In sum, will it become possible to have an independent review of the guts of the RESRAD 6.0 codes?

Agency Response: The source code will not be made available. The executable code is available and has been provided to the various working groups. An independent review of RESRAD is being conducted, but will not be available for six months.

4.3.2 through 4.3.6 These sections of the report provide the basis for the eventual negative evaluation of the "RAC Code" (as summarized in Table 1 on p. 20). To begin with, these sections state the author of the report [perhaps others] is unavailable to use RESRAD 5.82 as modified by RAC.

1) Was RAC asked to provide the technical assistance to help overcome this problem?

Agency Response: The RWG was not formed to assist vendors to develop code for its use; the RWG was formed to review any new information that might require a change to the RSALs. The group chose to seek existing codes that could assist in this purpose. The RAC's contract was with the RSALOP/RFCAB. It would be inappropriate for the RWG to request additional work from RAC. The RAC Code is not readily available for use, nor is it documented and benchmarked, as were the other candidate codes.

2) Was RAC told what criteria would be utilized to evaluate RAC's computer work?

Agency Response: None of the potential providers, including RAC were consulted regarding the selection criteria. The criteria developed as part of the Task 2 Computer Evaluation were developed independent of questioning any provider's ability to meet them.

3) Was RAC given an opportunity to meet said criteria?

Agency Response: The issue is availability of existing codes, not the ability to develop codes and documentation to meet custom needs. None of the potential providers were asked to modify their codes to meet the criteria established for this evaluation.

4) Was RAC told that their work would be downgraded (as per 4.3.3) if they had not documented how and why they modified RESRAD 5.82 in peer-reviewed journals?

Agency Response: It is common practice in industry to document computer code in a manner sufficient for others to use and understand its uses and limitations. The RWG had no obligation or need to contact code providers with its selection criteria prior to the evaluation; the RWG chose to evaluate codes whose bases were well proven. RAC was not told by the RWG, nor were any other vendors, that the NRC developed a regulatory guide, "Demonstrating Compliance with the Radiological Criteria for License Termination" (DG-4006)(1998) that explains the acceptance criteria for selection of site-specific codes/models at nuclear facilities. The guidance explains that software used

must in be conformance with the recommendations of the Institute of Electrical and Electronics Engineers (IEEE) Std.830-1984, Guide for Software Requirement Specifications. This is the industry standard for the development/modification of computer software and should be known companies doing that type of work if their code is to be readily accepted and used by the nuclear community.

- 5) In RAC's original work for the RSAL Oversight Panel, RAC was expected to calculate a scientifically defensible RSAL. They were asked to select a computer code for their work; they were not asked to produce a computer code or a modification of a computer code that would satisfy the several criteria spelled out in this report. Isn't it inappropriate to judge RAC's computer work by criteria it was never asked to meet in the first place?

Agency Response: The RFP issued to review the RSALs at RFETS dated June 1, 1998 had as it's purpose "...to conduct an independent scientific review of the RSALs established to cleanup RFETS. The review will evaluate the methods used as well as the accuracy and applicability of the input parameters used to calculate the current RSALs. The review will also encompass models, methodologies, and cleanup standards that may exist or are being for other sites..." The fact that RAC went beyond selecting a model that had been validated and verified was their decision. In the RFP section IV, Project Description and Scope, page 5, Computer Models, requires "Whichever model or models are recommended should be thoroughly validated. It is not necessary that the contractor perform this validation, peer reviewed, published studies will suffice". There is nothing in the Task 2 report that is not industry practice for selecting/modifying or using computer software. The selection criteria were developed by the RWG independently of any previous work done on the RSALs. The fact that RAC's work did not produce an acceptable code under these criteria does not denigrate the work RAC did, nor the value obtained from the code execution and resultant discussions. RAC's work was not judged in this selection process.

- 6) Should not this portion of the report be deleted and replaced by some discussion of RAC's work that adheres more closely to the facts of the matter?

Agency Response: The Task 2 Report is not intended to be review of RAC's work. The DOE requirements for cleanup of residual radioactive material (including soil) are contained in DOE Order 5400.5, Chapter IV. To be found acceptable for computing cleanup levels for radioactively contaminated soil, the computer code must meet specific regulatory criteria. The criteria the RWG developed was designed to meet those criteria and cannot be ignored.

- 7) If what is suggested in question 6 is done, would it not be pertinent to indicate how and why RAC modified RESRAD 5.82, then consider whether what RAC did should be incorporated into computer work now being contemplated?

Agency Response: The Agencies are proceeding using RESRAD 6.0 to calculate an RSAL. The RAC work contributed valuable information and insight that is being

considered and incorporated into the ongoing discussions of parameter inputs. If the Stakeholder Focus Group or some other group wants to explain how and why RAC modified the inputs to RESRAD, that might be an appropriate presentation to the Focus Group. The results of the recent workshop, however, seem to provide adequate evidence that the RAC Code did not result in significantly different results than would be obtained with RESRAD 6.0, assuming the same parameter inputs. The issues of greatest importance and controversy seem to occur in the area of parameter selection and application.

In conclusion to the foregoing, this report seems to confuse two things: deciding which computer code is best to use for current calculations of the RSALs, and assessing how RAC used RESRAD 5.82. The first can be done without looking at RAC. The second, which is really not done here, must be done somewhere, perhaps in the parameter paper. Still, this report should at least refer to how RAC used RESRAD 5.82, since a discussion of this issue would help clarify modifications that may need to be made to RESRAD 6.0, if this is the model being used for current calculations.

Agency response: The RWG has decided, based on current information that RESRAD 6.0 is the best computer code to proceed with. The group based this decision on the Task 2 criteria, and considered the available codes that might be acceptable, including the RAC Code. Assessing how RAC modified and used RESRAD is not a RWG responsibility, nor is it the subject of future planned reports.

On p. 19 there are two minor matters of wording. First, the final phrase of the first long paragraph contains no subject for the verb; what exactly is intended here? Second, on line nine of the final long paragraph, what precisely is meant by "EPA's proposed cleanup rule"?

Agency Response: The intent was to explain that from the comparison done by Radian between RESRAD 6.0 and RAC Code, the computer codes generate similar RSALs if similar parameters are used. The language will be changed to reflect this.

NOTES FROM RSALs WORKING GROUP MEETING ON 6/7/01

ITEMS COVERED ON 6/7:

1. Sample RESRAD run presented by Tom Pentecost.
2. Discussion of remaining parameter values for RESRAD runs (rural resident & wildlife refuge worker scenarios).
3. Presentation by Phil Goodrum (Syracuse Research Corporation) on the EPA risk assessment using RAGS risk equations.

ACTIONS

Action Item	Who	When	Notes
Provide distributions for indoor/outdoor time fraction, inhalation rate, and soil ingestion rate to Sandi	Victor Holm	6/8/01	Sandi will distribute to working group
Review distributions provided by Victor and provide opinion to Sandi	Phil Goodrum	6/12/01	Sandi will distribute to working group
Run RESRAD for rural resident & wildlife refuge worker scenarios 2 different ways for indoor/outdoor time fraction	Tom Pentecost	6/14/01	Working group will decide on 6/14 which method to use in the final runs
Check mass loading distributions used in Tom's sample RESRAD run and provide opinion to Sandi and Tom	Bob Nininger	6/11/01	Sandi will distribute to working group
Provide distribution for mass loading for foliar deposition to Sandi	Bob Nininger	6/11/01	Sandi will distribute to working group
Provide scaled distribution for soil ingestion to Sandi	Victor Holm	6/11/01	Sandi will distribute to working group
Provide parameter inputs for inhalation (in m ³ /yr) for rural resident to Tom and Sandi	Phil Goodrum	6/12/01	Sandi will distribute to working group
After review of Jim's memo, follow-up on solubility class used for cancer slope factor, if necessary	Diane Niedzwiecki	6/14/01	

DECISIONS

1. Include a paragraph in the final Task 3 report that explains the difference between the old and new ICRP values (ask Jim Benetti or Richard Graham).
2. Pu-239 and Pu-240 will be considered together and will be displayed as Pu-239/240.

NEXT MEETING: THURSDAY, 6/14/01, 8:30 a.m. at CDPHE, Bldg B, Rm B2G

Agenda Items:

1. Review the RESRAD runs (rural resident & wildlife refuge worker scenarios) completed by Tom Pentecost, including a comparison of the two different runs for indoor/outdoor time fraction.
2. Discuss the DCFs to be used for a child in RESRAD.
3. Discuss the solubility class used for cancer slope factors, if necessary.
4. Review the Task 3 report outline so the group can begin drafting the report.

NOTES FROM RSALs WORKING GROUP MEETING ON 6/14/01

ITEMS COVERED ON 6/14:

1. Discussed the DCFs to be used for a child in RESRAD.
2. Discussed the solubility class used for cancer slope factors.
3. Reviewed the Task 3 report outline so the group can begin drafting the report.
4. Discussed plant ingestion factors, need for further evaluation.
5. Discussed mass loading values/distribution.

ACTIONS

Action Item	Who	When	Notes
Contact Bill Monson (EPA statistician) on plant uptake distribution scaling and addition details. (More generally, how do you best add or combine distributions)	Carl Spreng	6/21/01	Carl share results with group at next meeting
Review distributions provided by Victor and provide opinion to Sandi	Phil Goodrum	6/18/01	Sandi will distribute to working group
Run RESRAD for rural resident & wildlife refuge worker scenarios 2 different ways for indoor/outdoor time fraction	Tom Pentecost	6/21/01	Working group will decide on 6/21 which method to use in the final runs
Develop strawman/outline for Task 3 Report (a re-do of the previous draft outline) including topic, content, and individual	Tom Pentecost	6/21/02	Tom will bring revised outline/strawman to next meeting
Write up justification for mass loading values/distribution, send to Sandi	Bob Nininger	6/19/01	Sandi will distribute to working group
Check conversions for ingestion parameters for resrad – send results to Sandi	Phil Goodrum	6/19/01	Sandi will distribute to working group
Provide parameter inputs for inhalation (in m ³ /yr) for rural resident to Tom and Sandi	Phil Goodrum	6/18/01	Sandi will distribute to working group

After review of Jim B's memo, follow-up on solubility class used for cancer slope factor (M or S for inhalation DCF?)	Diane Niedzwiecki	6/21/01	Diane will discuss with Richard Graham
Set up conference call to discuss issues related to solubility class for DCF (see above issue) and cancer slope factors with Mike Boyd, Phil Newkirk, Tom P, Diane N, Richard G & Bob N. for Wed @ 1:00	Jim Benetti	6/19/01	Diane will coordinate state involvement
Write up results of conference call referenced above	One from Group	6/21/01	Share info and summary with group in 6/21 meeting

DECISIONS !!

1. Utilize age average distributions for child already developed and used in RAGS as well as most conservative value Dose Conversion Factors.
2. Task 3 Report outline warrants revision.

NEXT MEETING: THURSDAY, 6/21/01, 8:30 a.m. in Bldg 60, @ Rocky Flats

Agenda Items:

1. Review the RESRAD runs (rural resident & wildlife refuge worker scenarios) completed by Tom Pentecost, including a comparison of the two different runs for indoor/outdoor time fraction.
2. Discuss the solubility class used for cancer slope factors.
3. Review the Task 3 report outline so the group can begin drafting applicable sections of the report.
4. Chatten Cowherd presenting wind tunnel test data & results **at 10:00am**
5. Discuss results of call featuring solubility class and cancer slope factors with group.
6. Discuss plant ingestion details concerning scaling and addition of lognormal distributions, decide on need for further expertise.

60/60